Begin

Select events to monitor — 100

Associate events with handlers — 105

Monitor event and capture event profile — 110

Registers allocated or condition met? — 115

Yes →

No ↓

Store event profile in register in profile register file — 120

Buffer allocated or condition met? — 125

Yes →

No ↓

Store event profiles in profile back-store buffer — 130

Store event profile in register in profile register file — 132

Make event profiles available to selected handler routine — 135

Process event profile data — 145

Identify regions for optimization — 150

Select optimizers for identified region — 155

Invoke optimizer — 160

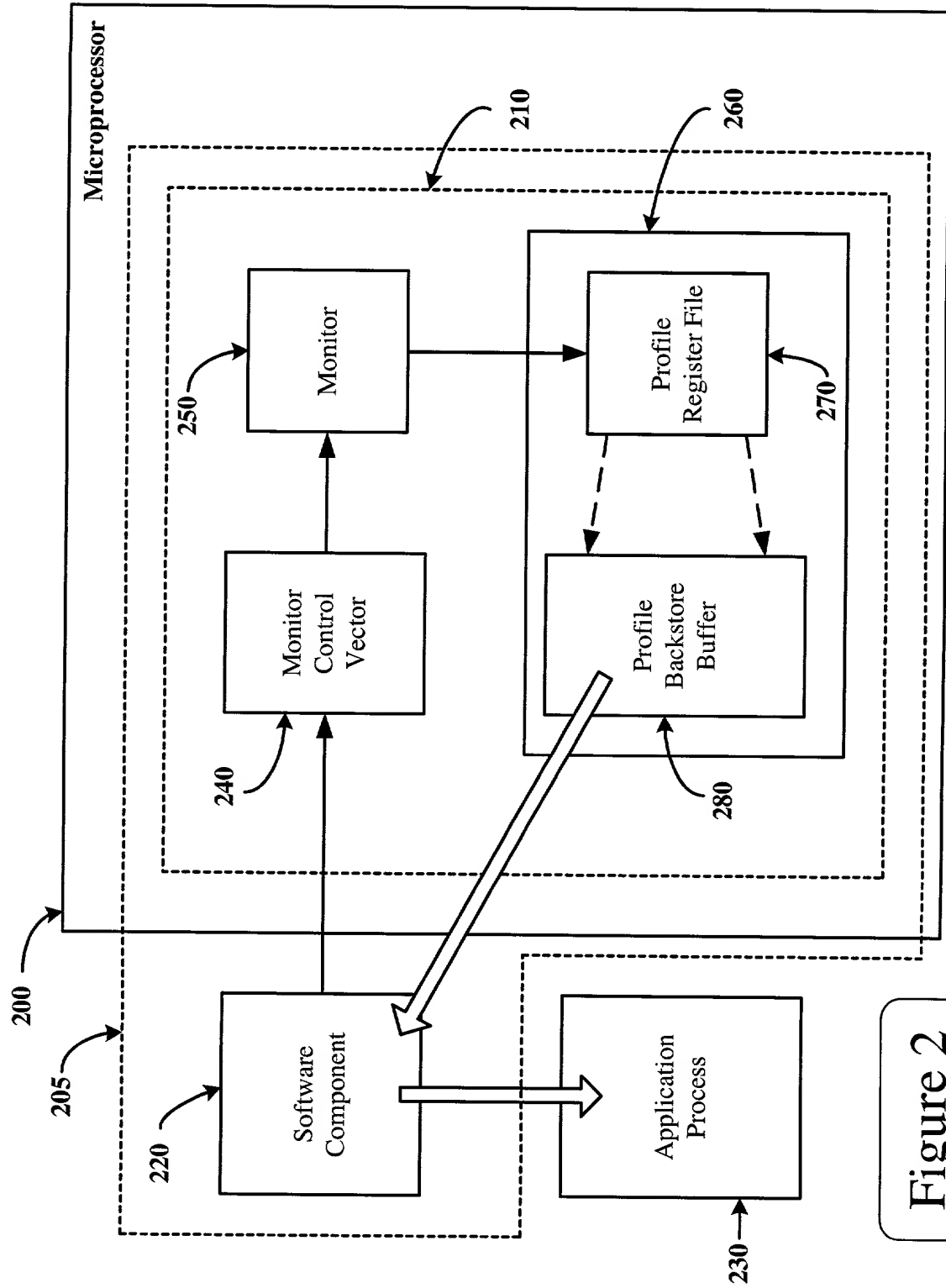Continue monitoring and profiling process — 165

Figure 1

Hybrid Dynamic Optimization Process

Microprocessor

200

205

220

Software
Component

Application
Process

230

250

Monitor

240

Monitor
Control
Vector

210

260

Profile
Register File

270

Profile
Backstore
Buffer

280

Figure 2

Hybrid Dynamic Optimizer

345

Monitor
Control Vectors

335

340

Code

Region
of Interest

Application
Process
330

300

Instructions

Handler
Routine₁

Handler
Routineₙ

Optimizer₁

Optimizerₓ

Optimizerₘ

305

310

315

320

350

325
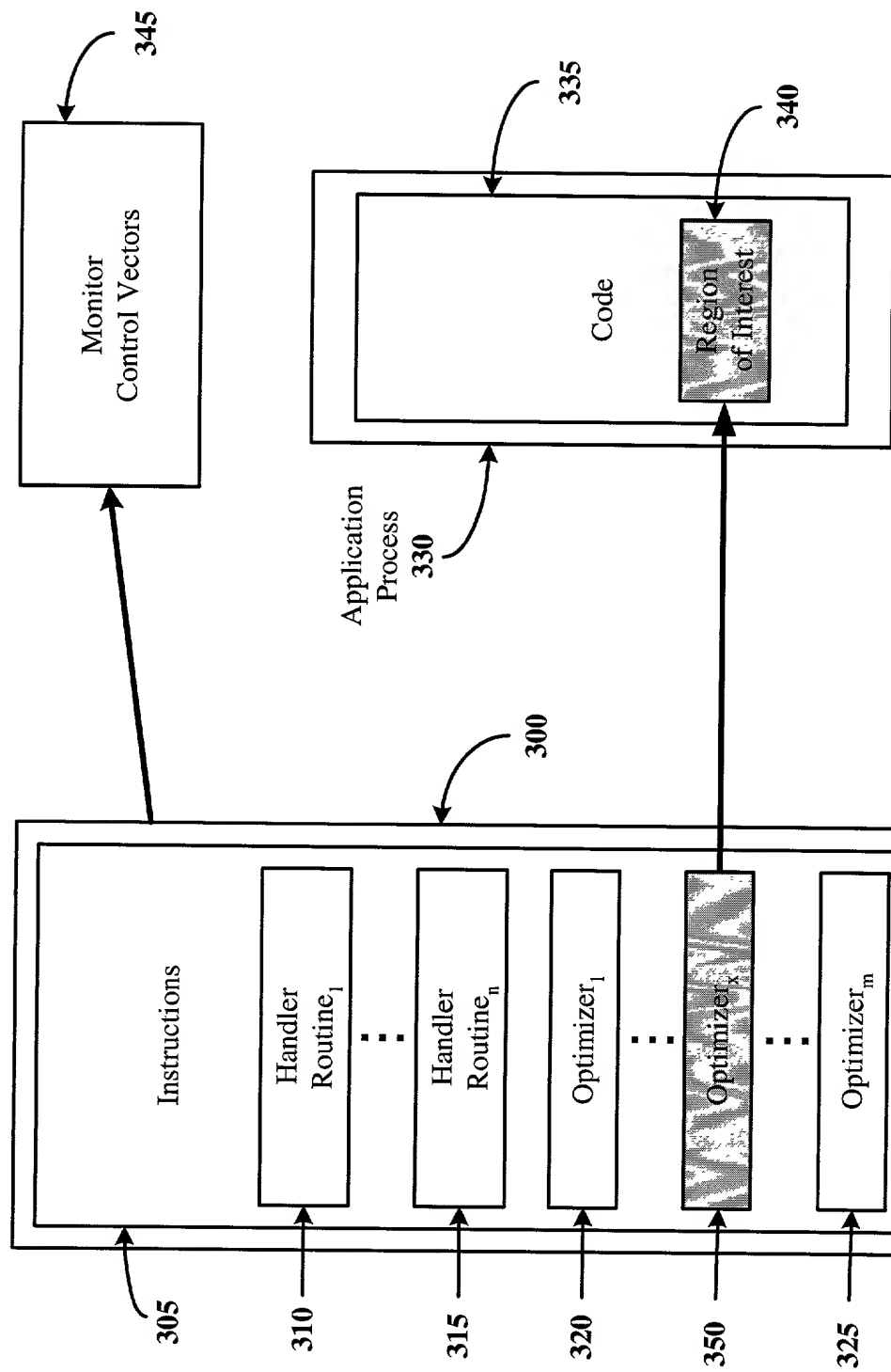
Software
Component
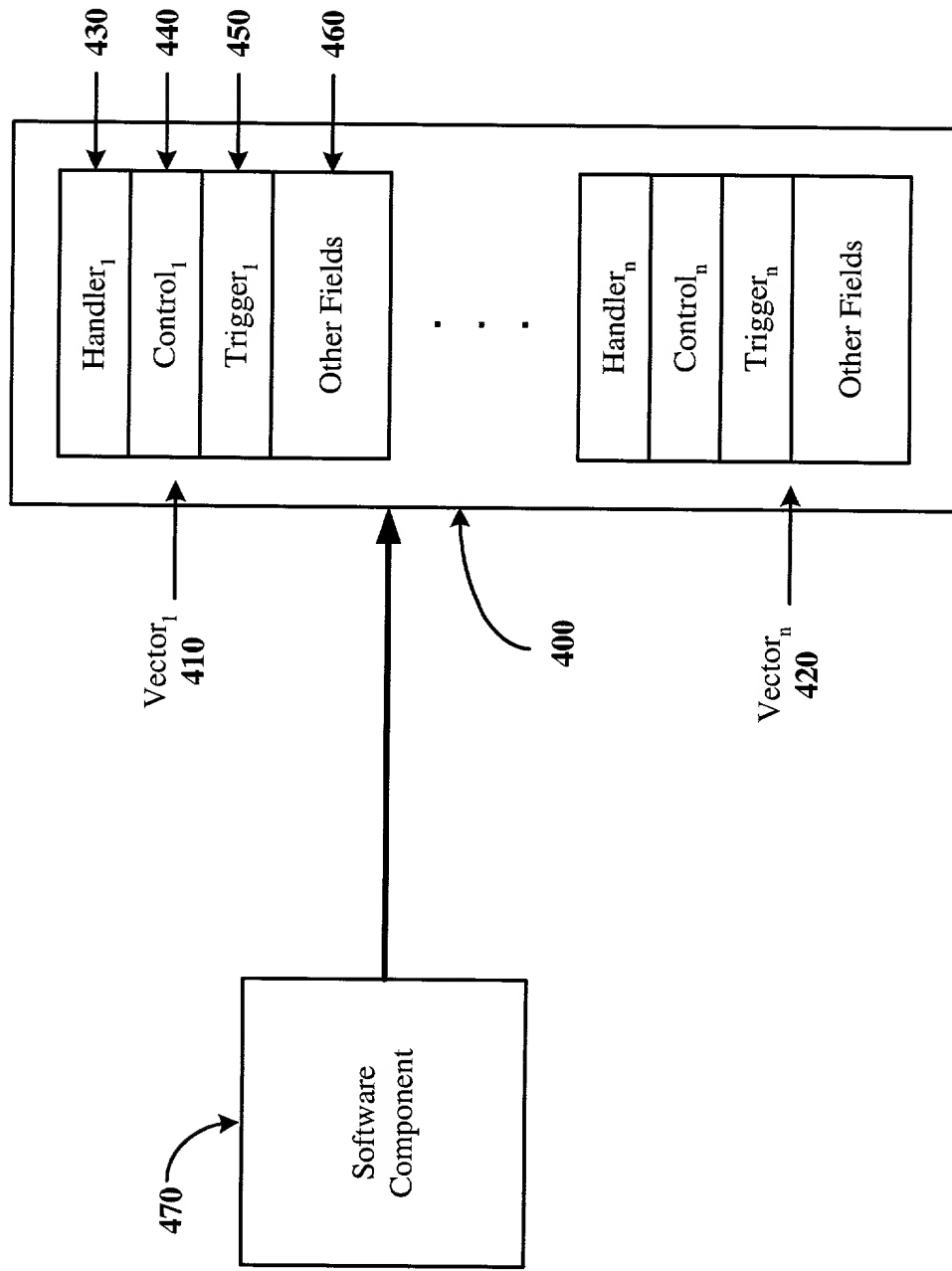
Figure 3

Monitor Control Vectors
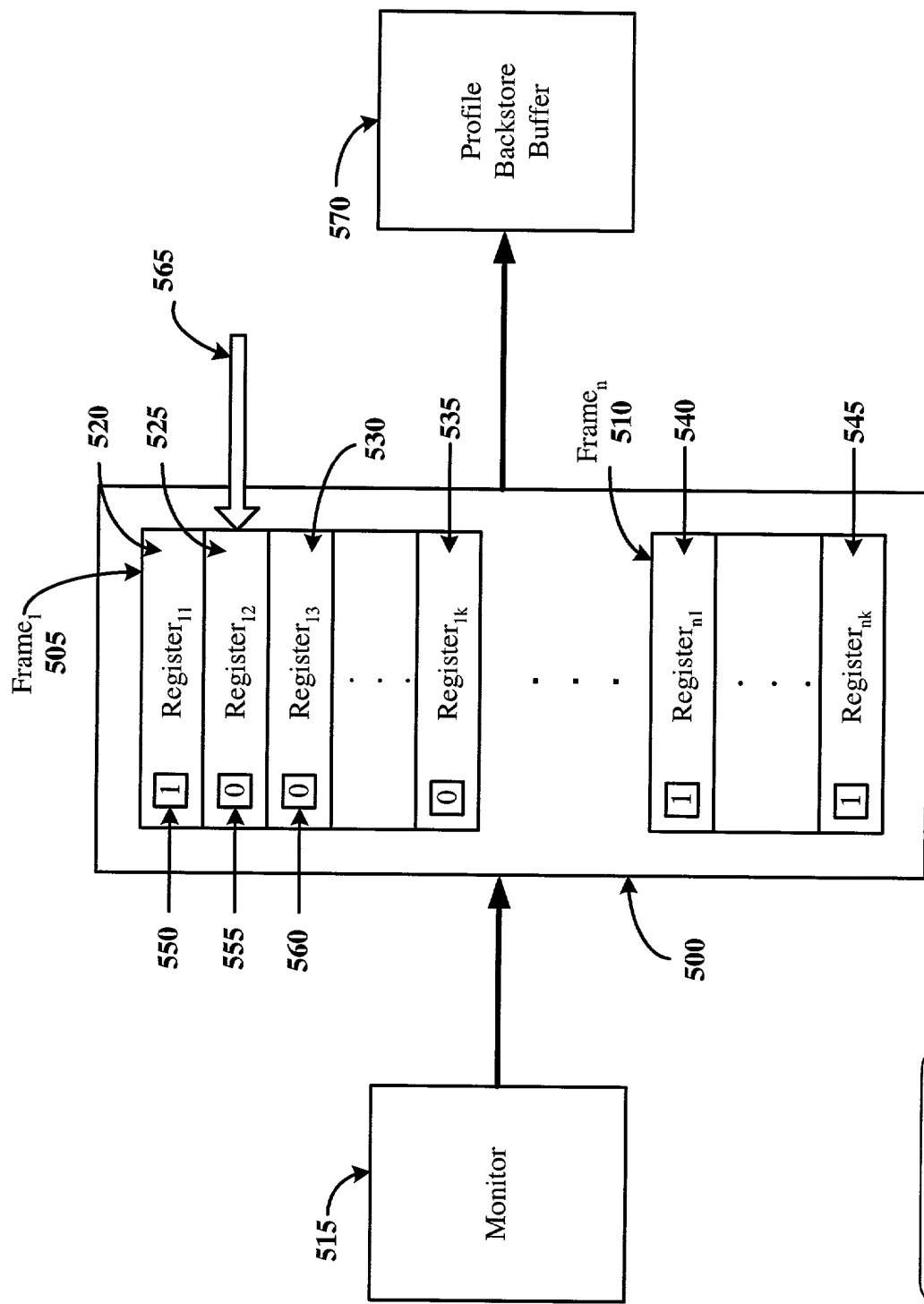
Figure 4

Figure 5

Profile Register File
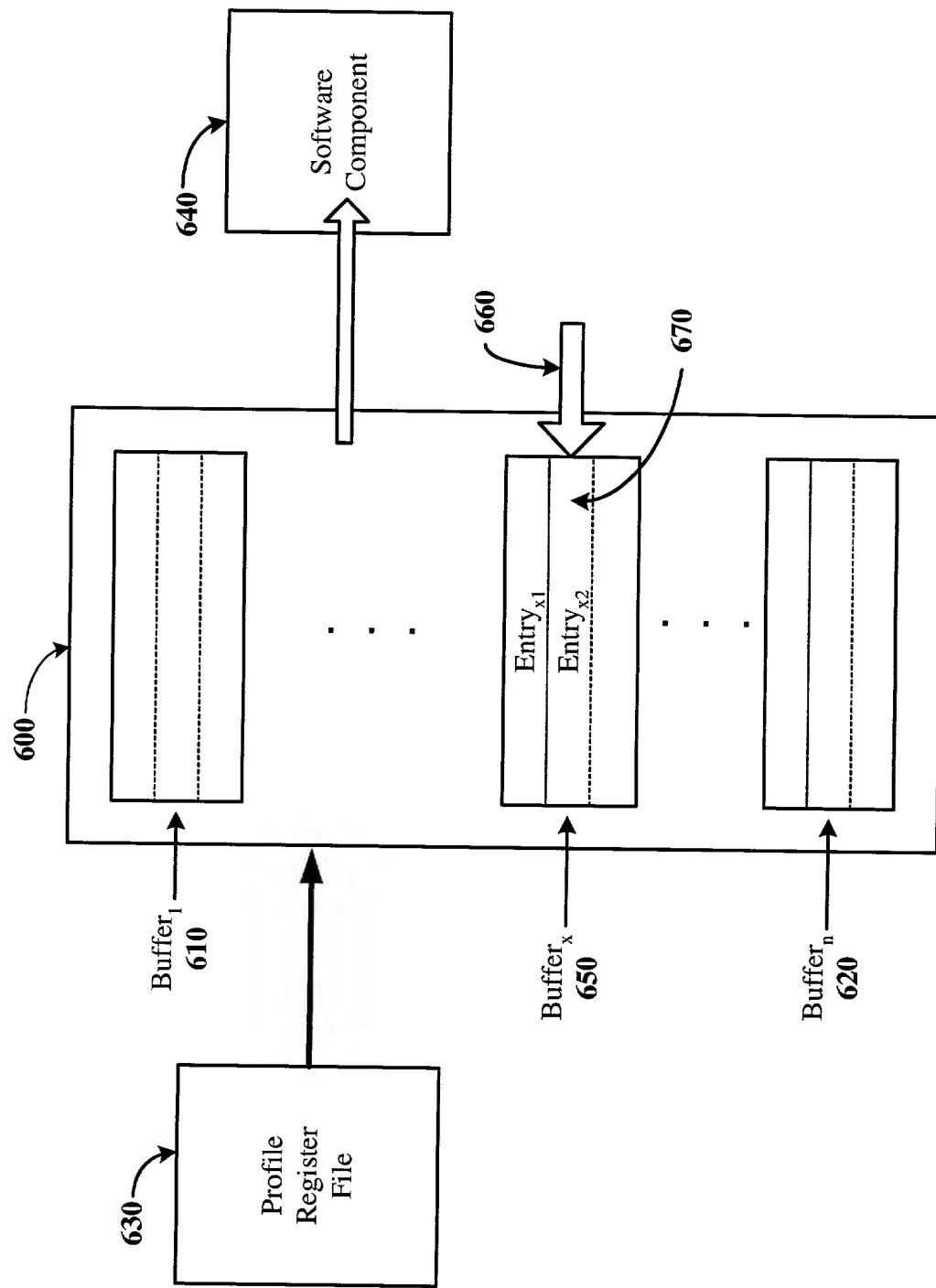
Figure 6

Profile Backstore Buffer

| IPG | FET | ROT | | EXP | REN | WLD | REG | EXE | DET | WRB |

705 710 715 720 725 730 735 740 745 750 755

700

Front End — 760

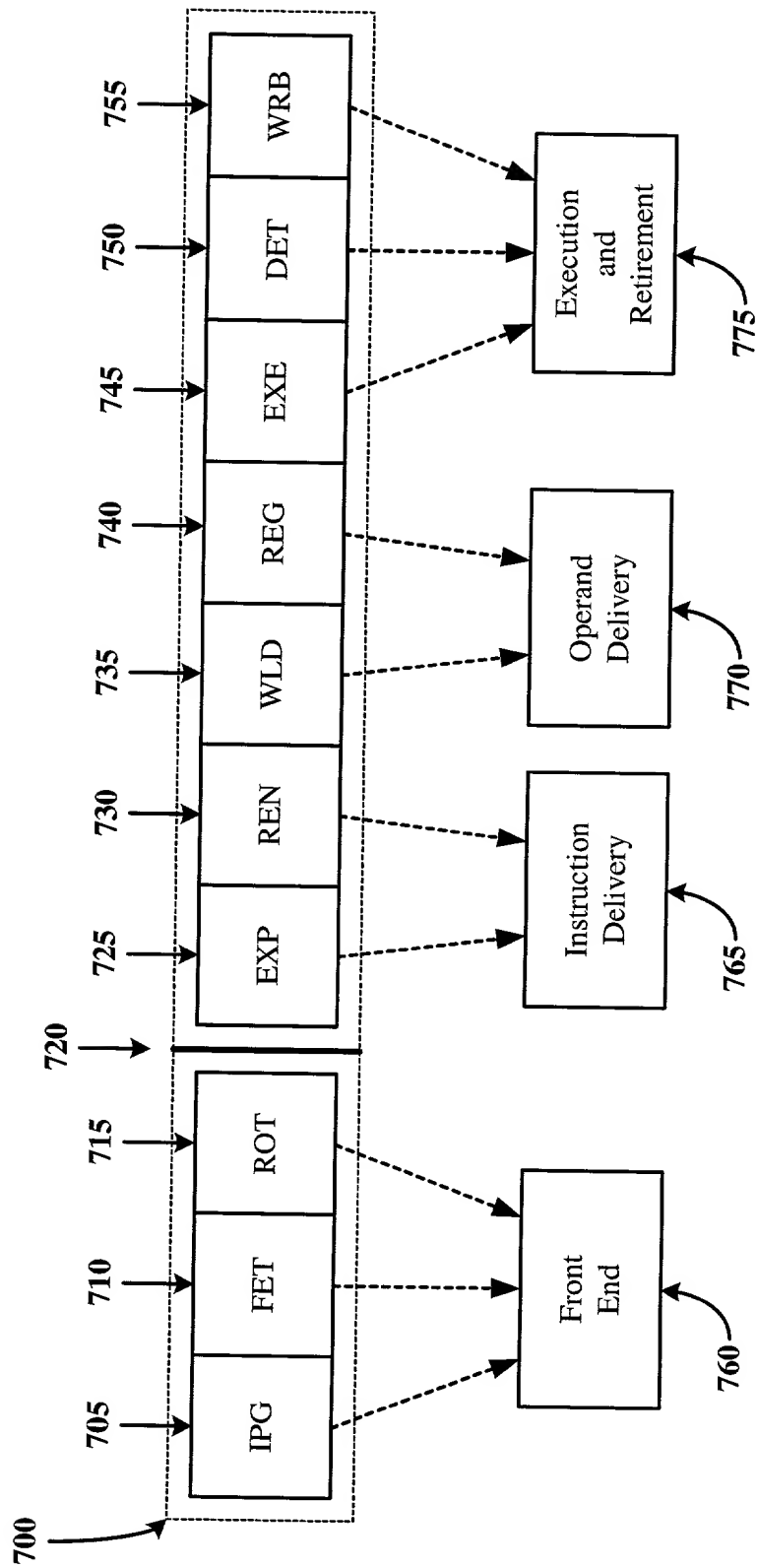Instruction Delivery — 765

Operand Delivery — 770

Execution and Retirement — 775

Figure 7   Microprocessor Pipeline